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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,787	02/15/2001	Jonathan S. Turner	55491	3031

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THE LAW OFFICE OF KIRK D. WILLIAMS  
1234 S. OGDEN ST.  
DENVER, CO 80210

EXAMINER
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SHAHRIER, SHARIF M

ART UNIT	PAPER NUMBER
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2664

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/784,787

Applicant(s)

TURNER ET AL.

Examiner

Sharif M Shahrier

Art Unit

2664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1-30-2002</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Lenoski (US 6,735,173).

Regarding claim 1, Lenoski teaches a packet switching system comprising of a plurality of first switching elements (SE-1) (see Fig. 1A elmt 112). The switching elements SE-1 receives or collects packets from its input interfaces (col 9 ln 14). These packets collectively comprise a volume of traffic, and embedded within the packets are flow control information (col 9 ln 26-32).

The flow control information is distributed to other packet switching components by sending control packets and “piggybacking” flow control

information in reserved fields of control or data messages (col 9 ln 25-33).

The flow control information provide indications of the congested state in the switching network.

The second switching element SE-2 comprises random access memory (RAM), read only memory (ROM), and a processor. The flow control information is manipulated by the processor based on executable instructions stored in memory to determine the desired state of the network to achieve the desired traffic quality for each class of service (col 7 ln 8-14).

Accordingly, backpressure signals (acknowledgement, clear-to-send, stop) are determined and sent out on outgoing packets (col 9 ln 30-35).

Each of the first switch elements SE-1 transmits control packets containing an indication of the collected information to a second switch element SE-2 of the packet switching system (col 9 ln 26-32). There are a plurality of links connecting each SE-2 element to a plurality of first element SE-1, enabling SE-2 to receive transmitted flow control information from one or more of the plurality of SE-1 switch elements (Fig. 1A).

The SE-2 elements process flow control information (col 9 ln 61-62) using processor and instructions stored in memory (Fig. 3B elmt 341 & 342) (col 9 ln 37-60).

Regarding claim 2, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Lenoski further teaches switching elements SE-1 and SE-2 comprising of first and second switching elements of a packet switching system. These correspond to elements **110** and **115** respectively in Fig. 1A.

Regarding claim 3, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Lenoski further teaches one possible embodiment for an input interface in a packet switching system. The switch element SE-1 comprises of memory (Fig. 2A elmt **222**). Lenoski also discusses a flow control data structure (col 10 ln 13-15) for each source-destination pair. This data structure can be maintained within the memory element **222**.

Regarding claim 4, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 3, and Lenoski further teaches the routing of packets through the switching elements SE-1, SE-2 and SE-3. Lenoski further teaches that there are I/O interfaces and line cards at the output of the packet switching system that may be associated with each destination (Fig. 4, col 11 ln 24-28).

Regarding claim 5, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 3, and Lenoski further teaches congestion indication for each destination (col 5 ln 41-48).

Regarding claim 6, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claims 1, 3 and 5, and Lenoski further teaches the routing of packets through the switching elements SE-1, SE-2 and SE-3. Lenoski further teaches that there are I/O interfaces and line cards at the output of the packet switching system that may be associated with each destination (Fig. 4, col 11 ln 24-28).

Regarding claim 7, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Lenoski further teaches congestion indication for each destination (col 5 ln 41-48).

Regarding claim 8, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Lenoski further teaches multi-stage switching architecture comprising of a plurality of first elements SE-1 (Fig. 4). This interconnection is used for routing and broadcasting information in a packet switching system.

Regarding claim 9, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Lenoski further teaches two stages of

switching elements (Fig. 1C). SE-1 & SE-3 combined is implemented as the first stage, while SE-2 the second switch element, is the final stage.

Regarding claim 10, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Lenoski further teaches the distribution of flow control information using the second switch element SE-2 (col 15 ln 21-23).

Regarding claim 11, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 10, and Lenoski further teaches the propagation and distribution of flow control information received via the input stage switch elements SE-1 & SE-3 to other components within the packet switching system (col 15 ln 31-34). Lenoski further teaches a method of accumulating and distributing flow control information (Fig. 8A-D).

Regarding claim 12, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 10, and Lenoski further teaches the propagation and distribution of flow control information received via the input stage switch elements SE-1 & SE-3 to other components within the packet switching system (col 15 ln 31-34). Lenoski further teaches a method of accumulating and distributing flow control information (Fig. 8A-D).

Regarding claim 13, Lenoski discloses a switching network comprising of two stages of switching elements (Fig. 1C). The first stage comprises of SE-1 & SE-3 (elmt 162) combined as a single component, and the second stage comprises of SE-2 (elmt 164). It is depicted in Fig. 7D that SE-1 & SE-3 maintains a "TABLE" or tabulator for maintaining quantities of packets. The second component SE-2 maintains an accumulator (RAM) (Fig 3B) to receive and store quantities of packets. There is also a processor (elmt 341) and instruction and data memory (elmt 342) to manipulate and process the stored information (also, col 9 ln 36-60).

Regarding claim 14, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claim 13, and Lenoski further teaches switching elements SE-1 and SE-2 comprising of first and second switching elements of a packet switching system. These correspond to elements 110 and 115 respectively in Fig. 1A.

Regarding claim 15, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claim 13, and Lenoski further teaches a multi-stage interconnection network comprising of 3 stages of switching elements SE-1, SE-2 and SE-3 for distributing and propagating indications of traffic information.



Regarding claim 16, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claims 13 and 15, and Lenoski further teaches that the second component SE-2 sends flow control messages “piggybacked” on normal data packets. These messages contain indications of traffic conditions, such as **ack**, **clr-to-send**, **stop**, etc. (col 10 ln 20-25).

Regarding claim 17, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claims 13 and 15, and Lenoski further teaches switching elements SE-1 and SE-2 comprising of first and second switching elements of a packet switching system. These correspond to elements **110** and **115** respectively in Fig. 1A.

Regarding claim 18, Lenoski teaches a packet switching system comprising of three stages of switching elements (Fig. 4). The first stage comprises of SE-1 (elmt **411**), the second stage comprises of SE-2 (elmt **412**), and the third stage comprises of SE-3 (elmt **413**). It is depicted in Fig. 7D that SE-1 maintains a “TABLE” for tabulating traffic information. The second component SE-2 maintains an accumulator (RAM) (Fig 3B) to receive and store quantities of packets. Lenoski teaches the propagation and distribution of flow control information received via the input stage SE-1, to SE-2 and SE-3 using the interconnection switching arrangement in Fig. 4.

Regarding claim 19, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claim 18, and Lenoski further teaches a final stage of the packet switching system including the second switch element SE-2 (Fig. 1C, elmt 164).

Regarding claim 20, Lenoski discloses all aspects of the claimed invention set forth in the rejection of claim 18, and Lenoski further teaches a final stage of the packet switching system including the second switch element SE-2 (Fig. 1C, elmt 164).

### **Conclusions**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- 1) **A.K. Choudhury et al. "Method of Regulating backpressure Traffic in a Packet Switched Network"**, US 5,475,682, Method of regulating backpressure traffic in a packet switched network made up of a plurality of switching elements. Packets destined for the succeeding switching element are queued in the local buffer memory of at least one other switching element. In response to the the occupancy of the buffer exceeding a predetermined threshold, a backpressure signal is generated.

- 2) **V.G.J. Peris et. al., “*Method and Apparatus for Delaying Packets Being Sent from a Component of a packet Switching System*”, US 6,728,211,**  
Method and apparatus for generating and responding to flow control messages indicating a previously congested port is now in a congested state in a packet switching network.
- 3) **Z.D.Dittia,”*Accumulating and Distributing Flow Control Information via Update Messages and Piggybacked Flow Control Information in Other Messages in a packet Switching System*”. US 6,654,342,** Method and apparatus for a switching system for periodic distribution of flow control information providing congestion and non-congestion indications in a packet switching network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharif M Shahrier whose telephone number is (571) 272-3136. The examiner can normally be reached on MF: 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2664

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SMS



RICKY NGO  
PRIMARY EXAMINER